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RUNNING HEAD: Strategic Effects on Affective Priming

'Automatic' Evaluation? Strategic Effects on Affective Priming

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Abstract

Two studies examined strategic effects on affective priming. Extending prior research by Klauer and Teige-Mocigemba (2007), the influence of different control strategies on a priming measure of prejudice was assessed. In both studies, a short stimulus onset asynchrony between prime and target (275 ms) was implemented along with considerable time pressure. In Study 1, participants could strategically eliminate priming effects with attitudinal prime categories (Arabs and liked celebrities) represented by several exemplars per category while priming effects for control categories remained intact. In Study 2, two strategies (payoff and faking) were induced to motivate participants to respond particularly fast and accurately to incongruent targets. Both strategies were successful in counteracting the usual priming effects, while leaving priming effects for non-targeted primes intact. We consider the role of so-called implementation intentions in accounting for the present findings.

(136 words)

KEYWORDS: affective priming, implicit measures, faking, attentional control, automaticity, strategic effects, implementation intentions

In recent years, several response-time based measures have been argued to tap fast evaluative processes without the respondent's intention (see Fazio & Olson, 2003). These so-called implicit measures were claimed to be uncontrollable making them particularly interesting for socially sensitive domains (Wittenbrink, 2007). While recent research revealed that one famous class of implicit measures, namely Implicit Association Tests (IATs; Greenwald, McGhee, & Schwartz, 1998) can be faked under certain circumstances (e.g., Fiedler & Blümke, 2005), the controllability of another well-known class of implicit measures, namely affective priming (Fazio, Sanbonmatsu, Powell, & Kardes, 1986), has not yet been studied as extensively (De Houwer, 2006). Extending research by Klauer and Teige-Mocigemba (2007; Study 1) the present research therefore investigated whether participants are able to control the outcome of a priming measure of prejudice intentionally.

On the controllability of affective priming

Referring to findings in the semantic priming literature (Neely, 1977; but see Hutchison, 2007) it is often argued that affective priming reveals *automatic* evaluations when stimulus onset asynchrony (SOA) is below 300 ms. Moors and De Houwer (2006) identified partial autonomy as a core feature of automaticity: A process is partially autonomous if it, once started, runs to completion independent of goals to modify, alter, or to stop it. Recently, Klauer and Teige-Mocigemba (2007; Study 1) showed that the assumption of partial autonomy does not hold for affective priming. Participants were able to strategically use prime information to modify their responses by preparing for a target of opposite valence although a short SOA of 275 ms and an 800 ms response-window impeded intentional processing of the prime.

Importantly, the affective priming paradigm employed by Klauer and Teige-Mocigemba differed from affective priming measures typically used by social psychologists (Wittenbrink, 2007) with regard to three aspects: Firstly, primes were clearly valenced, yet did not exemplify socially relevant categories (e.g., Arabs). Secondly, the number of exemplars per prime category was restricted to one. In a standard priming measure however, the prime category is typically represented by several exemplars. Use of expectancies based on prime *category* might be more difficult than use of expectancies tied to specific prime *exemplars* because prime categorization now has to precede the strategic use of the prime information. Thirdly, a negative contingency between prime valence and target valence was induced which might provide critical bottom-up support for control attempts. Participants might learn that tuning in to the contingency pays as it predicts correct responses in two thirds of the trials.

Hence, additional evidence is needed to evaluate whether more standard priming measures can be intentionally controlled. Study 1 aimed at replicating the pattern of Klauer and Teige-Mocigemba's findings using (a) attitudinal prime materials and (b) four exemplars instead of one per prime category. Study 2 removed the contingency between prime valence and target valence.

Study 1

In times of frequent media reports about terrorist attacks, prejudice against Arabs is prevalent in Western cultures (Echebarria-Echabe & Fernández-Guede, 2006). We therefore regarded the attitude towards Arabs relative to liked celebrities as a suitable socially sensitive domain for a standard priming measure.

Method

Participants

Participants were 51 University-of-Freiburg students with different majors. They received 1 Euro plus a pay that was contingent upon their performance in the priming task. One participant was excluded from all analyses because both his error rate (49.38%) and his mean latency (182 ms) were "far-out" values (Tukey, 1977) compared to the total sample's distributions (M=13.26% and M=520 ms, respectively).

Materials

Target words, presentation parameters, and list of trials were the same as in Klauer and Teige-Mocigemba (2007; Study 1). Prime categories comprised two categories denoted as “shift primes” and two categories denoted as “non-shift primes”. As shift primes, we selected four portraits each of Arabs (with turbans and beards) and liked celebrities (Jürgen Klinsmann, Albert Einstein, John Lennon, Ulrich Wickert). Four pictures each of ugly landscapes (two garbage dumps, cigarette stubs, and a bombed house) and beautiful landscapes (two sunsets and two seascapes) served as non-shift primes. In all studies, control strategies were only directed to trials with shift primes.

Priming trials

A priming trial started with the presentation of the prime picture in the screen’s center. After 275 ms, the prime was replaced by the target word which remained on screen until 800 ms had passed or a response was given by pressing one of two mouse keys (Voss, Leonhart, & Stahl, 2007). After an incorrect response, the red word “FEHLER” (error) immediately appeared for 200 ms. The intertrial interval was 500 ms.

List of trials

Following Klauer & Teige-Mocigemba (2007), there were five experimental blocks of 48 prime-target pairs, 12 pairs for each prime category. In each block, shift primes were followed eight times by inconsistent targets and four times by consistent targets. For non-shift primes, this eight-to-four-ratio was reversed. In the preceding practice block, shift primes were followed by nine inconsistent and three consistent targets, whereas for non-shift primes, this nine-to-three-ratio was reversed. The order of trials with shift versus non-shift primes was randomized.

Procedure

In individual sessions of 25 minutes, participants first read instructions for the upcoming priming task, were shown all 16 prime pictures, and were told about the payoff rules (1 Euro fixed amount plus 2 Euro Cents per correct response within 800 ms). Members of the experimental group, but not the control group, were told that shift primes would in most cases be followed by evaluatively incongruent targets (i.e., portraits of Arabs would usually be followed by positive words and portraits of liked celebrities by negative words). They were advised to use this knowledge (cf. Blair & Banaji, 1996) to maximize their payoff. Then, the practice block started followed by five experimental blocks. Each block began with a reminder of the payoff-rules and, for the experimental group, the advice on how to maximize payoff, and ended with performance feedback. Finally, participants judged each prime stimulus on a semantic differential, thereby validating the chosen prime stimuli.

Results and Discussion

All analyses throughout the paper are based on log-transformed response latencies of correct responses. All latencies were preprocessed by discarding latencies that were outliers in an individual's reaction time distribution according to Tukey's (1977) outlier criterion (i.e., latencies below (above) the first (third) quartile minus (plus) 1.5 times the individual's interquartile range).

A two (consistency) times two (prime type) times two (group) analysis of variance with repeated measures on the first two factors revealed a significant three-way interaction, $F(1,48)=4.88$, $p=.03$. Separate analyses with factors consistency and group were conducted for trials with non-shift primes and shift primes, respectively. For non-shift primes, a main effect of consistency, $F(1,48)=41.78$, $p<.001$, indicated the normal priming effect (all other Fs<1). In contrast, for shift primes, only the interaction of consistency and group reached significance, $F(1,48)=4.09$, $p<.05$, all other Fs<1. Thus, priming effects differed between groups for shift primes, but not for non-shift primes (see Figure 1). Whereas all other priming effects were larger than zero, $t(24)\geq 2.14$, $p\leq .043$, priming effects for shift primes in the experimental group were (non-significantly) reversed in direction, $t(24)=-.96$, $p=.35$. Thus, participants were able to prepare for a target of the opposite valence by using expectancies based on prime *categories*.

Study 2

In Study 2, we removed the contingency between (non-) shift prime valence and target valence. Two strategies motivated participants to control their responses to incongruent targets following shift primes (i.e., trials in which positive words followed pictures of Arabs or negative words followed pictures of liked celebrities).

Payoff manipulation. Participants in payoff-manipulated groups were told that it truly paid to anticipate incongruent targets following shift primes. For accurate responses below 800 ms in these critical trials, they earned 5 Euro Cents instead of one as for all other trials, respectively. Unlike in Study 1, participants could not benefit from a contingency between shift prime valence and target valence to control their responses strategically.

Faking manipulation. Research on the fakeability of the IAT suggested strategies participants might intentionally generate to influence an implicit measure's outcome (Blair, 2002; Blair, Ma, & Lenton, 2001; Steffens, 2004). One such strategy was instructed in Study 2. First, the affective priming effect was explained. Then, participants were asked to fake and reverse the prejudice priming effect by responding particularly fast and accurately to incongruent targets following shift primes. Participants were advised that in order to do so, it might be helpful to think of something positive (negative) about Arabs (liked celebrities). Participants received 60 seconds to practise such imaginations.

The two orthogonally manipulated strategies resulted in four groups: The payoff group received a payoff manipulation; the faking group a faking manipulation; the payoff+faking group both manipulations; the control group no manipulation. We assumed that applying the payoff and/or faking strategy to trials with shift primes as instructed should eliminate or even reverse the priming effect for shift primes, whereas the priming effect for non-shift primes should not be affected. Accordingly, we expected differences between the control group and the three experimental groups (payoff, faking, payoff+faking) only for priming effects engendered by shift primes, but not for priming effects engendered by non-shift primes. We did not expect pronounced differences between the three experimental groups.

These predictions were tested by means of planned comparisons on the priming effects. The comparisons contrasted (1) the control group with the experimental groups to test for overall effectiveness of the manipulations and (2) the three experimental groups with each other to test for differences in the manipulations' effectiveness.

Method

Participants

Participants were 120 University-of-Freiburg students with different majors. Participants of the faking and control group received 3.50 Euro. Participants of the payoff and payoff+faking group received 1 Euro plus a pay that was contingent upon their performance in the priming task (see above). One participant was excluded from all analyses because her error rate of 50.00% was a "far-out" value (Tukey, 1977) in the total sample's distribution (M=11.97%).

Procedure

In individual sessions of 20 minutes, participants first read general instructions about the upcoming priming task and were shown the 16 prime pictures. Then, they received group-specific instructions (see above). Afterwards, all participants worked through the priming task that used the same materials, parameters of stimulus presentation, and priming trials as in Study 1 except that there were as many evaluatively inconsistent trials as evaluatively consistent trials for shift primes as well as for non-shift primes in all blocks.

Results and Discussion

The difference score between priming effects for non-shift primes and priming effects for shift primes was submitted to the above described contrast analyses. According to the first contrast, the difference score between the two priming effects in the control group, M=-2 ms, SD=20 ms, was lower than the average difference score across the three experimental groups, *M*=14 ms, *SD*=30 ms, $F(1,115)=6.66$, $p=.011$. At the same time, there were no significant differences between the remaining three experimental groups, $F<1$. In all three experimental groups, priming effects for non-shift primes were significantly larger than priming effects for shift primes, all $ts \geq 2.11$, $p \leq .044$, whereas they did not differ in the control group, $t<1$ (see Figure 2).

Separate contrast analyses were conducted for priming effects engendered by non-shift primes and shift primes. The priming effect for non-shift primes in the control group, *M*=9 ms, *SD*=14 ms, did not differ from the average priming effect for non-shift primes across the three experimental groups, *M*=12 ms, *SD*=18 ms, $F<1$. Likewise, the second contrast revealed no significant differences between the remaining three experimental groups, $F(2,115)=1.32$, $p=.27$. However, the priming effect for shift primes in the control group, *M*=11 ms, *SD*=15 ms, significantly differed from the average priming effect for shift primes across the three experimental groups, *M*=-1 ms, *SD*=23 ms, $F(1,115)=8.79$, $p<.004$. There were no significant differences between the three experimental groups, $F<1$.

Priming effects for shift primes in the three experimental groups were (non-significantly) negative, $|t|<1$. All other priming effects were significantly larger than zero, all $ts \geq 3.04$, $p \leq .005$.

Note that mean response latencies and error rates did not permit the identification of participants who applied strategies (see Table 1). The control group neither differed from the three experimental groups in mean latencies, $F(1,115)=2.04$, $p=.16$, nor in mean error rates, $F(1,115)=1.91$, $p=.17$. Nor were there differences between the experimental groups in these dependent variables, $Fs<1.39$.

General Discussion

Two studies examined strategic effects on affective priming. Study 1 showed that not only specific prime exemplars but also prime categories (e.g., Arabs) can be strategically used to counteract affective priming effects. In Study 2, we removed the contingency between prime valence and target valence implemented in Study 1. Two strategies (payoff and faking) motivated participants to respond particularly fast and accurately to incongruent targets following specific prime categories. Both strategies effectively and selectively eliminated the usual priming effects. The present results therefore provide first evidence that a standard affective priming measure as typically used by social psychologists can be intentionally controlled.

Note that unspecific control goals have little effect on affective priming: Priming effects occur even when participants are asked to ignore the prime or not to be influenced by it (Klauer & Musch, 2003). Why then were participants able to use prime information strategically in our studies? According to Gollwitzer (1993, 1999), goal intentions are more easily attained when furnished with implementation intentions. Implementation intentions specify the when, where, and how of goal striving as a kind of if-then rule, thereby linking anticipated critical situations to goal-directed responses. Instructions like "respond especially fast and accurately given a positive (negative) word following an Arab (liked celebrity)" might serve as such if-then rules. Following Gollwitzer, implementation intentions are effective because they operate in a quasi-automatic fashion: They are elicited spontaneously and fast if the situation specified in the "if"-part is encountered. The implementation intentions induced through our instructions may thus be successful because they trigger the actions that are required to counteract normal priming effects in concrete situations spontaneously and sufficiently fast to interact with speeded responding (for similar effects in go/no-go, task switching, and Simon tasks, see Brandtstaetter, Lengfelder, & Gollwitzer, 2001; Cohen, Bayer, Jaudas, & Gollwitzer, 2008).

Although participants might be able to develop successful implementation intentions by themselves (Gollwitzer, 1999), it remains an open question how much and how elaborate advice is needed for successful faking. Given the ineffectiveness of unspecific control goals, we assume that unlike for self-reports, it is not sufficient to instruct participants to present themselves as unprejudiced (cf. Payne, Lambert, & Jacoby, 2002). More research is needed to delineate the boundaries and limits of strategic control in affective priming. Process dissociation approaches may help to disentangle the processes involved in the controllability of the priming measure's outcome (e.g., Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005; Klauer & Voss, in press). What we know at this point is that even standard affective priming with short SOAs can be distorted by control attempts in the service of self-presentation tendencies.

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Table

Table 1

Mean response latencies and error rates in Study 2 as a function of group

		Mean Response Latencies (ms)		Mean Error Rates (%)	
		M	*SD*	*M*	*SD*
Group	Control	525	51	10.15	6.63
	Payoff	540	67	11.14	5.52
	Faking	562	76	12.49	7.29
	Payoff+Faking	534	55	12.77	7.31

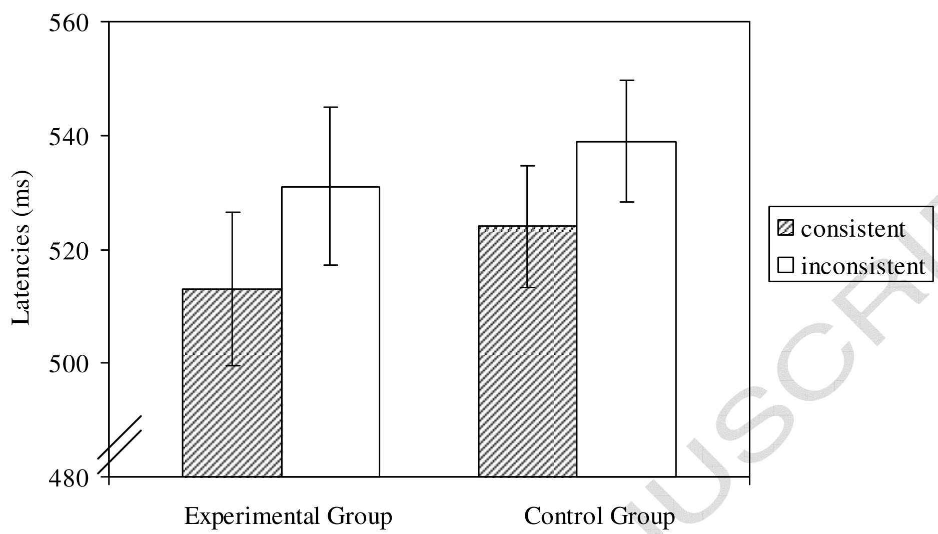
Figure Captions

Figure 1. Mean correct response latencies in Study 1 as a function of prime-target consistency and group for non-shift primes (upper panel) and shift primes (lower panel). Error bars indicate standard errors.

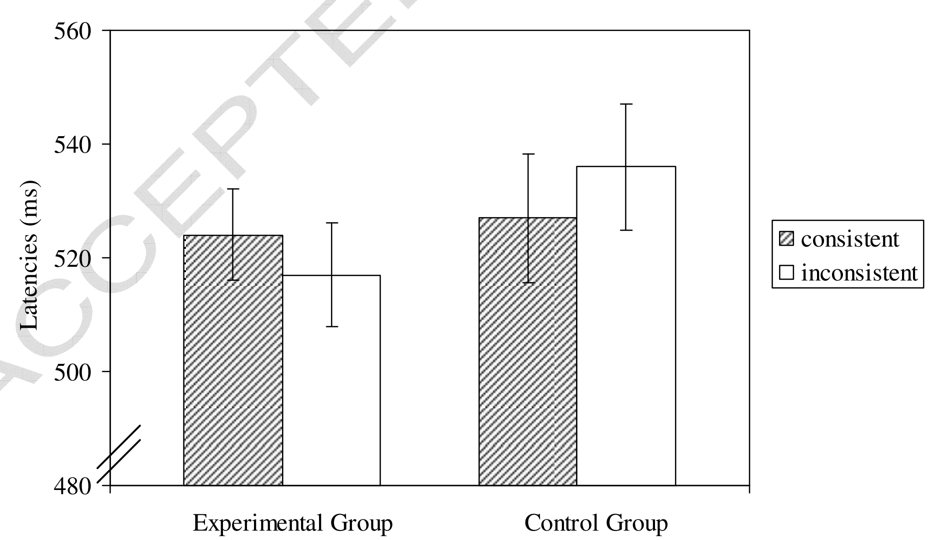
Figure 2. Mean priming effects in Study 2 as a function of prime type and group. Error bars indicate standard errors.

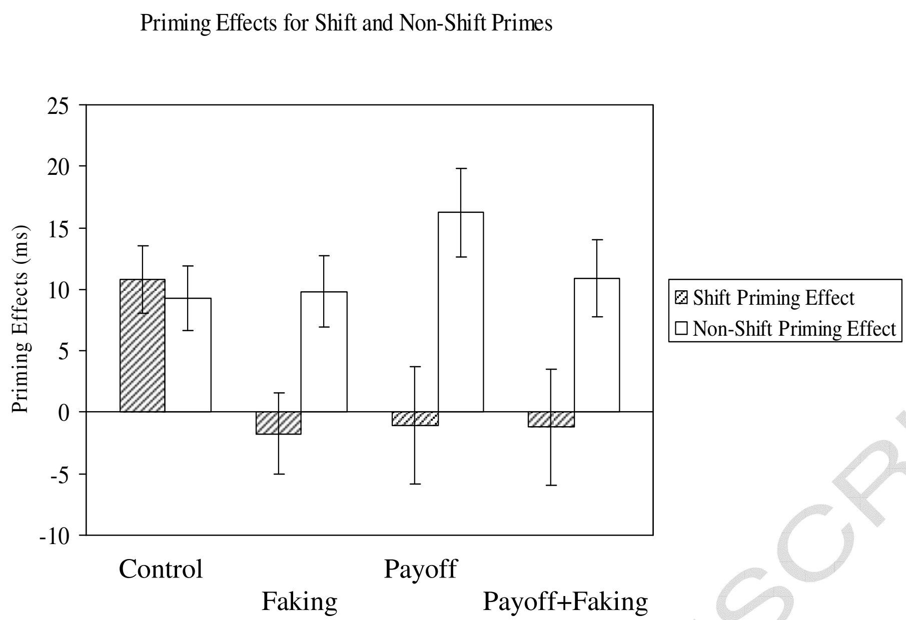
Figures

Non-Shift Primes



Shift Primes




Priming Effects for Shift and Non-Shift Primes
Priming Effects (ms)
25
20
15
10
5
0
-5
-10
Control
Faking
Payoff
Payoff+Faking
Shift Priming Effect
Non-Shift Priming Effect